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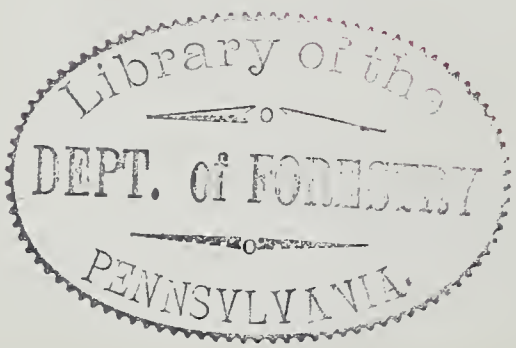

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WOODY PLANTS OF WESTERN NORTH CAROLINA.

BY

H. D. HOUSE, PH. D.

BILTMORE FOREST SCHOOL.

DARMSTADT 1918
[illegible] BUCHDRUCKEREI.

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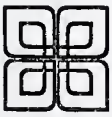

DARMSTADT 1913
C. F. WINTERSCHE BUCHDRUCKEREI.

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PREFACE.

The following list of woody plants of western North Carolina represents the result of five summers spent in the mountains of Buncombe, Haywood, Transylvania and Henderson counties, together with a few brief trips into other portions of the mountains. Not a few species, therefore, are included on the authority of Gray's New Manual of Botany and Small's Flora of the Southeastern States. Like its predecessor (Check-list of the Woody plants of Western North Carolina, 1910), this booklet is meant primarily to be of service to the students of the Biltmore Forest School, to whom it is respectfully dedicated.

DARMSTADT, Germany,
Jan. 15, 1913.

Between the eastern sea-coast of North Carolina and the summits of the highest mountains, lying at an altitude of over 6000 feet, is found a wonderfully wide range of soil and climatic conditions, as a result of which North Carolina possesses a flora exceeded in number of species by few other states.

In the lowlands, soil conditions are by far the most important factors regulating the distribution of species. In the mountainous sections, exposure, drainage and altitude become the dominant factors. Heinrich Mayr in his Waldbau auf naturgesetzlicher Grundlage attemps to classify the forest regions of the world according to climate (temperature, duration of warm and cold weather, rainfall, and altitude). For some sections this scheme is almost ideal, but on account of the influence of soil and exposure, as well as drainage conditions, this classification will always present some faults when applied to western North Carolina. Briefly, his classification, as far as it is applicable to this state is as follows:

I. Lauretum (or subtropical zone of evergreen broadleaf species).

Not typically represented in North Carolina, although many of the species of that zone are to be found in the extreme eastern and southeastern part of the state, such as **Quercus virginiana, Persea, Sabal, Pinus palustris, Taxodium, Chamaecyparis, Magnolia foetida, Myrica cerifera, Smilax laurifolia, Ilex glabra, Gordonia, Fraxinus caroliniana**, etc.

II. Castanetum (or warmer half of the winter-bald broadleaf region).

Extending from sea-level up into the foothills, and the valleys to about 3000 feet altitude (usually lower). Its extent is well represented by **Castanea pumila**, but not by **Castanea dentata**. In the eastern districts of the state, the effect of the coastal plain soils, produces a flora, in many respects different from that of the middle districts, although most of the characteristic species of this zone are to be found in the swamps, near the coast. The characteristic species are **Castanea pumila, C. dentata; Quercus lyrata, Q. imbricaria, Q. alba, Q. digitata, Q. marylandica, Q. palustris, Q. coccinea, Hicoria alba, H. aquatica. H. minima, H. glabra, Nyssa sylvatica, Ulmus, Robinia pseudo-acacia, Gleditsia, Acer rubrum, Carpinus, Ostrya, Juglans nigra, Liriodendron, Sassafras, Magnolia acuminata, Platanus, Liquidambar, Pinus taeda, P. palustris, P. virginiana, P. echinata, P. rigida, Juniperus**, etc.

III. Fagetum (or colder half of the winter-bald broadleaf region).

In general 3000 feet represents the lower extent of this zone, however, with increasing steepness of slope at high altitudes, the upper extent varies greatly from place to place, averaging perhaps 5000 feet. The characteristic species are: **Fagus grandifolia, Quercus alba, Q. coccinea, Q. rubra, Q. velutina, Q. prinus, Castanea dentata, Hicoria alba, H. glabra, H. ovata, Acer saccharum, A. rubrum, Fraxinus americana, Salix sericea, Betula lenta** and **lutea, Juglans cinerea, Liriodendron, Prunus serotina, Tilia, Pinus strobus, P. pungens, P. rigida, Tsuga canadensis**, etc.

IV. Picetum (or cold region of coniferous species).

In North Carolina, lying chiefly above 5000 feet altitude, and characterised by **Abies fraseri, Picea rubens, Sorbus americana, Betula lutea, Tsuga canadensis, Thuya occidentalis, Populus grandi-**

dentata, Viburnum alnifolium, Acer spicatum, Prunus pennsylvanicum, etc.

The principal endemic species of the southern Appalachians, and which occur chiefly at high altitudes are:

TREES.

Abies fraseri
Pinus pungens
Tsuga caroliniana
Magnolia cordata
Magnolia fraseri
Robinia viscosa
Robinia kelseyi
Crataegus (several species)

SHRUBS.

Berberis canadensis
Hydrangea radiata
Hydrangea kanawhana
Fothergilla montana
Spiraea virginiana
Robinia boyntoni
Robinia kelseyi
Amorpha glabra
Ilex beadlei
Ilex longipes
Pachistima canbyi
Hypericum buckleyi
Hudsonia montana
Dendrium prostratum
Dendrium hugeri
Azalea vaseyi
Rhododendron punctatum
Menziesia pilosa
Leucothoe recurva
Leucothoe catesbaei
Andromeda floribunda
Gaylussacia ursina

Vaccinium simulatum
Vaccinium hirsutum
Oxycoccus erythocarpum
Diervilla sessilifolia
Diervilla rivularis
Lonicera flava.

The endemic woody species of the southern Appalachians appear to form about 16 percent of the native woody flora of the western part of the state.

SPERMATOPHYTA. Seed Plants.

Subdivision I. GYMNOSPERMAE.

Pinaceae. Pine Family.

Pinus strobus Linnaeus. — **White Pine, Weymouth Pine.**

Occuring chiefly along streams and bottom-lands above 2500 feet altitude. Rare below that altitude. No stands of commercial importance are known. Reproduction in nature is poor. Large and wonderfully fine plantations of the White Pine have been made on the Biltmore Estate.

Pinus rigida Miller. — **Pitch Pine.**

A common tree below 3000 feet altitude, but of little commercial value.

Pinus pungens Lambert. — **Table mountain Pine.**

Usually in scattered groups on the dry, exposed ridges. Common in and about the Pink Beds Valley and on Lookingglass Mountain.

Pinus virginiana Miller. — **Jersey or Scrub Pine.**

Common on dry or sandy sterile soils and slopes, chiefly below 3000 feet altitude.

Pinus echinata Miller. — **Short-leaf Yellow Pine.**

Common below 2500 feet altitude. In some places in stands of commercial size and value. The only commercially valuable pine of the region.

Picea rubens Sargent. — **Red Spruce.**

Picea rubra (Poir.) Dieterich.

Picea australis Small.

Occuring in dense stands, usually mixed with Balsam, on the higher mountains, descending to 4000 feet altitude on cold northern exposures, and even lower along gravel bars of the streams. Extensively logged for pulp-wood.

Picea mariana (Miller) B. S. P. — **Black or Swamp Spruce.**

Picea nigra Link.

Highest points of the Smokies *(Gattinger)*; White Top Mountain, Virginia, about 4 miles north of the North Carolina line *(Small)*; and doubtless on adjacent peaks in North Carolina.

Abies fraseri (Pursh) Poiret. — **Balsam, She Balsam, Fraser's Fir.**

Abundant above 5000 feet altitude, and with the spruce logged for pulp-wood.

Tsuga canadensis (Linn.) Carriere. — **Hemlock.**

One of the most important timber trees of the state, the bark being used in the tannic acid industry. Commercially abundant on all cold northerly exposures above 3000 feet altitude, and extending along streams down to 2000 feet.

Tsuga caroliniana Engelmann. — **Carolina Hemlock.**

A smaller tree, with darker stouter leaves, stouter twigs and larger cones. Local and rare. In the Pink Beds Valley and ridges toward South Carolina.

Thuya occidentalis Linnaeus. — **Arbor Vitae, White Cedar.**

Said to occur on the mountains of the northwestern counties, but not seen on the Balsam mountains.

Juniperus communis Linnaeus. — **Common Juniper.**

Rare and local, known only from the summits of some of the mountains in the northwestern part of the state.

Small records **Juniperus siberica** (Burgsd.) Rydb. from the mountains of North Carolina, but I hesitate to include it here as I have seen neither specimens or other reports of its occurence in this state.

Juniperus virginiana Linnaeus. — **Red Cedar.**

Locally abundant below 3000 feet altitude, but rarely of commercial size. Occurs at 4000 feet elevation on Lookingglass Mountain.

Subdivision II. ANGIOSPERMAE.

Class 1. MONOCOTYLEDONAE.

Liliaceae. Lily Family.

Smilax rotundifolia Linnaeus. — **Green Brier.**

Smilax glauca Walter. — **Saw Brier.**

Smilax hispida Muhlenberg. — **Hispid Brier.**

All three species of Smilax are woody spinescent vines, most abundant at altitudes below 3500 feet, in thickets, on dry hillsides and along streams.

Poaceae (Gramineae). Grass Family.

Arundinaria tecta (Walter) Muhlenberg. — **Reed, Cane.**

A slender grass-like shrub with hollow jointed woody stems, in the mountains up to 3500 feet. Common along all streams below 2000 feet.

Class 2. DICOTYLEDONAE.

Salicacae. Willow Family.

Salix nigra Marshall. — **Black Willow.**

A tree common along streams below 3000 feet altitude.

Salix discolor Muhlenberg. — **Glaucus Willow..**

A large shrub along streams chiefly at low altitudes.

Salix cordata Muhlenberg. — **Cordate Willow.**

Salix humilis Marshall. — **Prairie Willow.**

Along streams, on gravel bars and on the mountains.

Salix sericea Marshall. — **Silky Willow.**

Common along most streams up to 4500 feet altitude.

Salix alba Linnaeus. — **White Willow.**

Cultivated and frequently established.

Salix babylonica Linnaeus. — **Weeping Willow.**

Commonly planted and occasionally becoming established.

Populus grandidentata Michaux. — **Large-toothed Aspen.**

A small tree, occuring only on mountain summits or exposed balds, above 4000 feet altitude.

Populus deltoides Marshall. — **Cottonwood.**

Populus monilifera Aiton.

Populus virginiana Fougeroux.

Populus candicans Aiton. — **Balm of Gilead.**

Introduced and freely established.

Populus alba Linnaeus. — **White, or Silver-leaved Poplar.**

A commonly planted European species, escaped in many localities.

Populus tremula Linnaeus. — **European Aspen.**

Established along the banks of the Swananoa River near Biltmore.

Populus nigra Linnaeus. — **Black Poplar.**

Established in America since the earliest settlements, and regarded by Schneider as a distinct form under the name of:

Populus nigra hudsonica (Michx.) Schneider.

Populus hudsonica Michaux.

Populus dilatata of American books.

Almost as common is the **Lombardy Poplar:**

Populus nigra italica (Moench.) Du Roi.

Myriaceae. Sweet Gale Family.

Myrica asplenifolia Linnaeus. — **Sweet Fern.**

Comptonia peregrina (Linn.) Coulter.

Common in the Pink Bed Valley (3000 feet alt.) and doubtless in other sandy localities. More abundant in the eastern parts of the state.

Juglandaceae. Walnut Family.

Juglans cinerea Linnaeus. — **Butternut, White Walnut.**

A forest tree scattered throughout the mountains chiefly between 3000 and 4000 feet altitude.

Juglans nigra Linnaeus. — **Black Walnut.**

A large tree of good soils and bottomlands, chiefly below 3000 feet altitude.

Hicoria ovata (Mill.) Britton. — **Shagbark or Shellbark Hickory.**

Carya alba Nutall.

An unfrequent tree in North Carolina, occuring chiefly below 3000 feet altitude. (Including *Hicoria carolina-septentrionalis* Ashe.)

Hicoria alba (Linn.) Britton. — **Mockernut or White Hickory.**

Carya tomentosa Nuttall.

A rather common forest tree up to 3500 feet altitude, above which altitude it is only local.

Hicoria microcarpa (Nutt.) Britton. — **Small-fruited Shagbark.**

Carya microcarpa Nuttall.

Hicoria odorata (Marshall) Sargent.

A single tree of what appears to be this species occurs near Biltmore.

Hicoria glabra (Mill.) Britton. — **Pignut Hickory.**

Carya porcina Nuttall.

The most abundant Hickory of the region and forming an important element of the forest up to 4000 feet altitude. The recognized varieties are:

var. **villosa** (Ashe) Sargent.

H. villosa Ashe, and *H. pallida* Ashe.

var. **piriformis** Muhlenberg.

Possessing distinctly pear-shaped fruit and more commonly recognized by European writers than in America.

Hicoria minima (Marsh.) Britton. — **Bitternut.**

Carya amara Nuttall.

Carya cordiformis (Wangenh.) K. Koch.

A common tree along streams up to 3500 feet altitude.

Betulaceae. Birch Family.

Corylus americana Walter. — **Dwarf Hazelnut.**

A small shrub of open places.

Corylus rostrata Aiton. — **Beaked Hazelnut.**

An uncommon shrub along streams and on exposed ridges.

Ostrya virginiana (Mill.) K. Koch. — **Leverwood, Hop-Hörnbean, Ironwood.**

A small or medium sized tree of the mountain forests.

Carpinus caroliniana Walter. — **Blue Beech, Water Beech, Hornbean.**

A small or medium sized tree along streams, between 1000 and 3000 feet altitude. By no means common.

Betula lenta Linnaeus. — **Sweet, Cherry or Black Birch.**

Abundant on well drained mountain slopes.

Betula lutea Linnaeus. — **Yellow or Gray Birch.**

Betula excelsa Aiton.

Common on mountain slopes and summits, especially above 3000 feet altitude. Forms intermediate between this and the preceeding species are described as **Betula alleghaniensis** Britton.

Betula nigra Linnaeus. — **River or Red Birch.**

A common tree along streams below 3000 feet altitude, and frequently attaining a large size.

Alnus rugosa (Du Roi) Spreng. — **Smooth Alder.**

Alnus serrulata Willdenow.

A very common shrub along streams below 3000 feet alt.

Alnus crispa (Aiton) Pursh. — **Green or Mountain Alder.**

Rare and local on the highest mountain summits; Roan Mt. and northward. Described as *Alnus alnobetula* in Small's Flora of the Southern States.

Fagaceae. Beech Family.

Fagus grandifolia Ehrhart (1788). — **American Beech.**

Fagus ferruginea Aiton (1789).

Fagus americana Sweet (1826).

Common along streams and on cold northern slopes above 3000 feet altitude. Rare at lower elevations.

Castanea dentata (Marsh.) Borkhausen. — **American Chestnut.**

One of the most important and abundant hardwoods of the region. The wood is used for the production of tannic acid and the manufacture of lumber. Often wormy.

Castanea pumila (Linn.) Miller. — **Chinquapin.**

A common shrub below 2500 feet altitude.

Quercus alba Linnaeus. — **White Oak.**

An important timber tree, common up to 4000 feet altitude.

Quercus minor (Marsh.) Sargent. — **Post Oak.**

Quercus stellata Wang.

Quercus obtusiloba Michaux.

A tree of little value, on dry soils, below 3000 feet altitude.

Quercus platanoides (Lam.) Sudworth. — **Swamp White Oak.**

Quercus bicolor Willdenow.

Unfrequent. Along streams and bottom-lands below 3000 feet altitude.

Quercus prinus Linnaeus. — **Chestnut Oak.**

A valuable timber tree, most abundant between 2500 and 4000 feet altitude. The bark is used in the production of tannic acid and the wood closely resembles White Oak in color and quality.

Quercus acuminata (Michx.) Houda. — **Yellow Chestnut Oak.**

Quercus muhlenbergii Engelmann (1877).

A comparatively rare species, occuring at widely separated localities, chiefly along streams at lower elevations. (Biltmore, 1800 feet alt. *House.*)

Quercus prinoides Willdenow. — **Chinquapin Oak.**

An unfrequent shruby species of dry or rocky hill and mountain sides.

Quercus nana (Marsh.) Sargent.

Quercus ilicifolia Wang.

Western North Carolina (Small's Flora So. U.S.).

Quercus rubra Linnaeus. — **Red or Mountain Oak.**

One of the most abundant and valuable trees of the region, though of commercial abundance chiefly above 2000 feet altitude.

Quercus digitata (Marsh.) Sudworth. — **Finger or Spanish Oak.**

Quercus falcata Michaux.

Quercus cuneata Wangh. (1787).

A common tree up to 3000 feet altitude or higher on dry or sandy soils. Of little commercial value.

Quercus coccinea Muenchhausen. — **Scarlet Oak.**

Common on dry or rocky soils up to 3000 feet altitude, at higher altitudes chiefly on southern exposures. Commonly called **Spanish Oak** in the mountains.

Quercus velutina Lambert. — **Black or Yellow Oak.**

Quercus tinctoria Bartram.

A common tree of dry or exposed situations. and on southern exposures at high elevations.

Quercus marylandica Muenchhausen. — **Black Jack or Barren Oak.**

On waste fields with dry sandy clay soils and sandy barrens, very rare within the mountains. (Biltmore.)

Quercus imbricaria Michaux. — **Shingle Oak.**

Common everywhere along streams below 3000 feet alt.

Quercus nigra Linnaeus. — **Water Oak.**

Quercus aquatica Walter.

Rarely seen within the mountainous region, and then below 2000 feet altitude along streams.

Quercus palustris Muenchhausen. — **Pin Oak.**

Along bottomlands below 2000 feet altitude and like the preceeding species very scarce within the mountains. (Biltmore.)

Several hybrid oaks occur, the most conspicuous being:

Quercus Leana Nuttall *(imbricaria* x *velutina)* Lea Oak.

Quercus alba x **prinus** Engelmann. (*Quercus saulii* C. K. Schneider.)

Quercus imbricaria x **coccinea.**

Quercus digitata x **velutina** (*Quercus willdenowiana* Zabel, 1903). Biltmore Herb. 5723d.

Quercus digitata x **rubra** (*Quercus runcinata* Engelm., 1877).

Ulmaceae. Elm Family.

Ulmus fulva Michaux. — **Red or Slippery Elm.**

Rare, along streams below 2500 feet alt. (Biltmore.)

Ulmus americana Linnaeus. — **American or White Elm.**

Very rare, along streams below 2000 feet altitude.

Celtis occidentalis Linnaeus. — **Hackberry, Sugarberry.**

A small tree or shrub along streams at lower elevations.

Celtis crassifolia Lamark. — **Rough-leaved Hackberry.**

A small tree, chiefly along streams below 3000 feet alt.

Celtis georgiana Small. — **Georgia Hackberry.**

A shrub, or rarely a small tree of banks and hillsides below 2000 feet altitude.

Celtis smallii Beadle. — **Small's Hackberry.**

A small to medium sized tree, along streams at low altitudes. Most abundant east and southeast of the Blue Ridge.

Moraceae. Mulberry Family.

Toxylon pomiferum Rafinesque. — **Osage Orange.**

Maclura pomifera Schneider.

Introduced from the Southwest, and rather frequent below 2500 feet elevation.

Broussonetia papyrifera (Linn.) Vent. — **Paper Mulberry.**

Commonly planted for ornament and a frequent escape.

Morus rubra Linnaeus. — **Red Mulberry.**

Common along streams and in low woods up to 2000 feet altitude, occasional up to 3000 feet.

Santalaceae. Sandalwood Family.

Pyrularia pubera Michaux. — **Rabbitwood, Oil Nut.**

A frequent shrub along streams and in thickets.

Two other small shrubs of this family; **Nestronia umbellula** Rafinesque, and **Buckleya distichophylla** (Nutt.) Torrey, occur immediately east of the mountains.

Loranthaceae. Mistletoe Family.

Phoradendron flavescens (Pursh) Nuttall. — **American Mistletoe.**

A rather infrequent parasitic shrub within the mountains, chiefly upon Nyssa and Quercus.

Aristolochiaceae. Birthwort Family.

Aristolochia macrophylla Linnaeus. — **Pipe-vine.**

Aristolochia sipho L'Her.

A large woody vine, the stems frequently over 100 feet in length and 2 inches thick, ascending to the tops of tall trees of the mountain sides and along streams. The medullary rays of the wood are large and soft and decay very rapidly.

Ranunculaceae. Crowfoot or Buttercup Family.

Zanthorhiza apiifolia L'Her. — **Shrub Yellow-root.**

One of the most abundant of small shrubs, particularly along streams and in wet places. (*Xantorrhiza* Marsh.)

The species of **Clematis** and **Viorna** are rarely woody at the base, but are classed by some as woody vines. The species in western North Carolina are:

Clematis virginiana Linnaeus.
Viorna viorna (L.) Small (*Clematis viorna* L.).
Viorna glaucophylla Small (*Clematis glaucophylla* Small).
Viorna addisonii (Britton) Small (*Clematis addisonii* Britton).
Viorna ochroleuca (Ait.) Small (*Clematis ochroleuca* Aiton).
Viorna ovata (Pursh) Small (*Clematis ovata* Pursh).

Magnoliaceae. Magnolia Family.

Magnolia acuminata Linnaeus. — **Cucumber Tree.**
Tulipastrum acuminatum Small.

A fairly abundant tree of the mountain slopes above 2500 feet altitude, and often attaining a large size. Nearly equal to the Yellow Poplar in quality of wood.

Magnolia cordata Michaux. — **Heart-leaved Cucumber Tree.**
Tulipastrum cordatum Small.
Magnolia acuminata var. *cordata* Sargent.

A rare tree of mountain sides from Ashe County to northern Georgia. Flowers larger than the preceeding, yellow, faintly streaked within with red.

Magnolia fraseri Walter. — **Wahoo, Umbrella Tree.**

Locally abundant on cool damp mountain slopes or along streams in deep mountain ravines. Remarkable for its immense fragrant white flowers and soft white wood.

Magnolia macrophylla Michaux. — **Large-leaved Umbrella Tree.**

Rare and local, chiefly west of our range. Known from the western part of the state on the French Broad and Pigeon Rivers, and east of the mountains in Lincoln County.

Magnolia tripetala Linnaeus. — **Elkwood, Umbrella Tree.**
Magnolia umbrella Desr.

Stream banks and mountain sides, rare within the mountain section, but abundant both east and west of the mountains.

Liriodendron tulipifera Linnaeus. — **Yellow Poplar, Tulip Tree.**

The most important hardwood timber tree of the region. Common except on dry or southerly exposures, between 1500 and 4000 feet altitude.

Menispermaceae. Moonseed Family.

Menispermum canadense Linnaeus. — **Moon-seed.**

A slender herbaceous vine, woody below, rather rare along streams and in thickets.

Calycanthaceae. Calycanthus Family.

Calycanthus fertilis Walter. — **Shrub, Allspice.**
Butneria fertilis Rearney.

There are two well marked forms of this abundant shrub, sometimes recognized as distinct:

a) *C. fertilis* Walter (*C. glauca* Willd.) with leaves glaucous beneath and smooth above.

b) *C. nana* Loisel. (*C. laevigadus* Willd., *C. inodorus* Ell., *C. ferax* Michx., *Butneria nana* Small), with leaves green on both sides and scabrous above. Flowers of both vary greatly in fragrance.

Calycanthus floridus Linnaeus **(Carolina Allspice)** apparently does not occur within the mountains, while *Butneria mohrii* Small, of Alabama, should be referred to **Calycanthus ovatus** Aiton (1789).

Anonaceae. Custard Apple Family.

Asimina triloba Dunal. — **Common Papaw.**

Rare, occuring chiefly toward the west of the mountains below 2000 feet altitude.

Berberidaceae. Barberry Family.

Berberis canadensis Miller. — **American Barberry.**

A small local shrub on the higher mountains of the southern part of the region.

Lauraceae. Laurel Family.

Malapoena geniculata (Walter) Coulter. — **Pond Spice.**

Litsea geniculata Benth. & Hooker.

A shrub with zigzag forking branches, native of the gulf states. East of Ducktown in North Carolina *(Gattinger)*.

Sassafras sassafras (Linn.) Karsten. — **Sassafras.**

Laurus sassafras Linnaeus (1753).

Laurus variifolium Salisbury (1796).

Sassafras officinale Nees & Ebermeir (1830).

Sassafras variifolium Kuntze.

Common everywhere, except in moist woods at high altitudes. Sometimes attaining a large size.

Benzoin aestivale (Linn.) Nees. — **Spice Bush, Fever Bush.**

Laurus aestivalis Linnaeus (1753).

Laurus benzoin Linnaeus (1753).

Lindera benzoin Blume.

Benzoin benzoin Coulter.

A common shrub in wet places, up to 3500 feet altitude.

Saxifragaceae, Saxifrage Family.

Philadelphus inodorus Linnaeus. — **Syringa, Mock Orange.**

Locally abundant.

A variety, **Philadelphus inodorus strigosus** Beadle, is also recognized.

Philadelphus grandiflorus Willdenow.
Exact distribution given by Beadle in Biltmore Botanical Studies. Hickory Nut Gap *(Curtis)*.

Philadelphus hirsutus Nuttall.
Along the French Broad River below Asheville *(Curtis)*.

Ribes rotundifolium Michaux. — **Round-leaved Gooseberry.**
Common in thickets at high altitudes.

Ribes cynosbati Linnaeus. — **Common Wild Gooseberry.**
Common on rocky banks and cliffs, above 3000 feet altitude.

Ribes prostratum L'Her. — **Fetid Currant.**
In thickets on the higher mountain summits.

Escalloniaceae (Hydrangaceae). Hydrangea Family.

Decumaria barbara Linnaeus.
A climbing woody vine on trees and rocks, rare in the mountains Occasional in the southwestern part *(Gattinger)*.

Hydrangea arborescens Linnaeus. — **Wild Hydrangea.**
A common shrub in damp places. Variable in leaf-form (varieties **cordata** T. & G., and **oblonga** T. & G.) and marginal flowers are sometimes sterile.

Hydrangea radiata Walter. — **White-leaved Hydrangea.**
Rocky slopes and cliffs, on the Blue Ridge.

Hydrangea kanawhana (Millsp.) House.
Hydrangea arborescens kanawhana Millspaugh (1892).
Hydrangea radiata Gray's Man. ed. 6, not Walter.
Hydrangea cinerea Small (1898).
Local. (Davidson's River, *House*).

Hamamelidaceae. Witch Hazel Family.

Fothergilla monticola Ashe. — **Dwarf Alder.**
A rare little shrub of mountain cliffs and slopes (*Fothergilla major* Small's Flora, not Loddiges [1829]).

Hamamelis virginiana Linnaeus. — **Witch Hazel.**
A common shrub or small tree of moist situations.

Liquidambar styraciflua Linnaeus. — **Red Gum, Sweet Gum.**
Only along the streams at elevations below 2000 feet.

Platanaceae. Plane Tree Family.

Platanus occidentalis Linnaeus. — **Sycamore, Buttonwood, Planetree.**
Common along streams below 3000 feet alt.

Rosaceae. Rose Family.

Opulaster opulifolius (Linn.) Kuntze. — **Nine-bark.**
Physocarpa opulifolia Rafinisque.
Not an uncommon shrub along streams below 3000 feet alt.

Spiraea salicifolia Linnaeus. — **Meadow-sweet.**
A common but small shrub in wet places. The closely related

species, **Spiraea latifolia** (Aiton) Borkhausen, which occurs in southern Virginia, may be looked for in the adjacent mountains of North Carolina.

Spiraea corymbosa Rafinisque. — **Purple-stemmed Meadow-sweet.**
Mountains of North Carolina according to Gray's Manual.

Spiraea tomentosa Linnaeus. — **Hardtack, Steeple-bush.**
In open swampy places chiefly below 3000 feet alt.

Spiraea virginiana Britton.
A rare shrub described from West Virginia to Tennessee. Collected in North Carolina by Vasey in 1878 *(Millspaugh)*.

Rubus occidentalis Linnaeus. — **Black-cap, Black Raspberry.**
Common.

Rubus strigosus Michaux. — **Red Raspberry.**
Rubus idaeus subsp. *strigosus* Focke.
Rubus idaeus var. *aculeatissimus* in Gray's Manual.
Common.

Rubus allegheniensis Porter. — **Mountain Blackberry.**
Rubus nigrobaccus Bailey.
Common everywhere.

Rubus canadensis Linnaeus. — **Northern Blackberry.**
Rubus millspaughii Britton.
Common. Fruit smaller and sweeter than the preceeding.

Rubus argutus Link. — **Blackberry.**

Rubus roribaccus (Bailey) Rydberg. — **Blackberry.**

Rubus procumbens Muhlenberg. — **Trailing Blackberry, Dewberry.**

Rubus invisus (Bailey) Britton. — **Dewberry.**

Rubus hispidus Linnaeus. — **Dewberry.**

Rubus odoratus Linnaeus. — **Purple-flowered Raspberry, Thimbleberry.**
Rubacer odoratus Rydberg.
Common throughout the mountains.

Dasiphora fruticosa (L.) Rydberg. — **Shrubby Cinquefoil.**
Potentilla fruticosa Linnaeus.
A small shrub of northern bogs. Reported from near Ducktown, in North Carolina, by Gattinger.

Sibbaldiopsis tridentata (Soland) Rydberg. — **Three-toothed Cinquefoil.**
Potentilla tridentata Aiton.
A low, diffuse, scarcely woody species of exposed mountain summits and cliffs.

Rosa carolina Linnaeus. — **Swamp Rose.**
Common in wet places.

Rosa humilis Marshall. — **Dwarf or Wild Rose.**
Local on cliffs and banks.

Rosa rubiginosa Linnaeus. — **Sweetbrier Rose.**
Naturalized about the older settlements.

Malaceae (Pomaceae). Apple Family.

Sorbus americana Marshall. — **Mountain Ash.**

Pyrus americana De Candolle.

Common in the open forests of the higher mountains, usually above 5000 feet altitude.

Pyrus communis Linnaeus. — **Pear.**

Persistent chiefly in the abandoned orchards which are plentiful in the mountains.

Malus angustifolia (Ait.) Michaux. — **Narrow-leaved Crab-apple.**

Pyrus angustifolia Aiton.

Pyrus coronaria var. *angustifolia* Wenzig.

A small tree of dry situations apparently intergrading with the next and more abundant species.

Malus coronaria (Linn.) Miller. — **Wild Crab-apple.**

Pyrus coronaria Linnaeus.

Malus malus (Linn.) Britton. — **Common Apple.**

Pyrus malus Linnaeus.

Malus sylvestris Miller.

Like the pear, persistent and spreading, especially in and around old orchards.

Aronia arbutifolia (L.) Elliot. — **Common Chokeberry.**

Mespilus arbutifolia Linnaeus (1753).

Pyrus arbutifolia Linnaeus f. (1781).

A common shrub in various situations.

Aronia nigra (Med.) Britton. — **Black Chokeberry.**

Hahnia arbutifolia nigra Medicus (1793).

Mespilus arbutifolia melanocarpa Michx. (1803).

Pyrus melanocarpa Willdenow (1809).

Aronia melanocarpa Elliott (1821).

Pyrus nigra Sargent.

A shrub locally common in swamps.

Amelanchier canadensis (Linn.) Medicus. — **Shad Bush, Service Berry.**

A small to medium sized tree, common throughout.

Amelanchier botryapium (Linn. f.) Borkhausen.

A small tree of stream banks below 2000 feet altitude.

Amelanchier spicata (Lam.) Decne.

Crataegus spicata Lamarck (1783).

Pyrus ovalis Willdenow (1796).

Amelanchier ovalis Borkhausen (1803).

Amelanchier canadensis var. *spicata* Sargent.

A small shrub of rocky banks and cliffs.

Crataegus tomentosa Linnaeus.

Common along streams below 2000 feet altitude.

Crataegus coccinea Linnaeus.

Crataegus chapmani (Beadle) Ashe.

Crataegus macrantha var. **neofluvialis** (Ashe) Eggleston.
Crataegus neofluvialis Ashe.
Along mountain streams, Frequent.
Crataegus punctata Jacquin.
Crataegus boyntonii Beadle. — **Boynton's Thorn.**
Common along mountain streams up to 3500 feet alt.
Crataegus cordata (Miller) Aiton. — **Washington Thorn.**
Common along streams. (*C. phaenopyrum* [L. f.] Medic.)
Crataegus buckleyi Beadle.
Woods and banks in the mountains.
Crataegus rubella Beadle.
Mountain woods in the extreme western part of the state.
Crataegus palleus Beadle.
Upland woods of Buncombe County.
Crataegus aprica Beadle.
Sunny exposures in the mountains from the Tennessee border to Georgia.
Crataegus lanata Beadle.
Rocky woods and sandy soil of the western part of the state.
Crataegus vailiae Britton.
Crataegus gregalis Beadle.
Sandy flats of the French Broad River.
Crataegus biltmoreana Beadle. — **Biltmore Thorn.**
In dry and rocky woodlands.
Crataegus craytoni Beadle. — **Crayton's Thorn.**
On bluffs along the French Broad River.
Crataegus rustica Beadle.
Old fields and woodlands near Biltmore.
Crataegus arcana Beadle.
Old fields and woodlands near Biltmore.
Crataegus basilica Beadle.
Mountain woods and slopes, western North Carolina.
Crataegus macrosperma Ashe.
Mountain woods.
Crataegus nubicola Beadle.
High mountains, above 5000 feet altitude.
Crataegus roanensis Ashe. — **Roan-mountain Thorn.**
Crataegus fluviatilis Sargent.
Crataegus ascendens Ashe, and *C. uber* Ashe.
Chiefly above 4000 feet altitude on the mountains of the western part of the state and adjacent Tenessee.
Crataegus holmesiana var. **villipes** Ashe. (*C. tenuifolia* Britton.)
Crataegus crus-galli Linnaeus. — **Cockspur Thorn.**
Woods, thickets and stream banks.
Crataegus oxyacantha Linnaeus. — **English Hawthorn.**
Occasionally established and spreading.

Amygdalaceae (Drupaceae). Plum Family.

Prunus pennsylvanica Linn. f. — **Bird, Fire or Pin Cherry.**
Common, especially at higher altitudes.

Prunus cuneata Rafinisque. — **Dwarf Cherry.**
A low spreading shrub, included here on the authority of Small's Flora.

Prunus cerasus Linnaeus. — **Morello or Sour Cherry.**
Cultivated and escaped in places.

Prunus avium Linnaeus. — **Sweet or European Black Cherry.**
Cultivated and occasionally escaped.

Prunus nigra Aiton. — **Horse Plum, Canada Plum.**
A small tree or shrub of the higher mountain summits. (Included on the authority of Small's Flora.)

Prunus americana Marshall. — **Wild Yellow Plum.**
A shrub or small tree of dry hillsides below 3000 feet.

Prunus virginiana Linnaeus. — **Choke Cherry.**
Occasionally reported from western North Carolina.

Prunus serotina Ehrhart. — **Wild Black Cherry.**
Padus serotina Agardh.
Frequently attaining a large size in the forests of the mountain slopes. A variety, **Prunus serotina neomontana** Sudworth is sometimes recognized.

Leguminosae. Pulse or Bean Family.

Cercis canadensis Linnaeus. — **Red Bud, Judas Tree.**
A small tree or shrub of dry hillsides and banks, below 2500 feet altitude.

Gleditsia triacanthos Linnaeus. — **Honey Locust, Three-thorned Locust.**
Common only on bottomlands below 2500 feet altitude.

Cladrastis lutea (Michx.) K. Koch. — **Yellow-wood.**
Virgilia lutea Michaux.
Cladrastis tinctoria Rafinesque.
A local tree of the region adjacent to Tennessee.

Robinia pseudoacacia Linnaeus. — **Yellow or Black Locust.**
Common on dry hillsides and high ridges.

Robinia viscosa Vent. — **Clammy Locust.**
A local tree of the mountains toward the Georgia line.

Robinia hispida Linnaeus. — **Hispid Locust.**
A common shrub of dry ridges and cliffs.

Robinia boyntoni Ashe. — **Dwarf Locust.**
A rare shrub of high mountain slopes. Pisgah *(House)*.

Robinia kelseyi Cowell, in Bailey's Cycl. Am. Hort. 4: 1538. 1902.
Type from near Highlands. Apparently related to **R. pseudoacacia.**

A frequent european garden hybrid, **Robinia pseudoacacia x viscosa** may be looked for in those parts of the state where the two species grow together.

Amorpha tennesseensis Shuttleworth. — **Lead Plant.**
Rocks and cliffs near the Tennessee border.

Amorpha fruticosa Linnaeus. — **Wild Indigo, Lead Plant.**
A common shrub in dry or rocky situations.

Amorpha glabra Poiret. — **Wild Indigo, Lead Plant.**
Amorpha montana Boynton.
A rare shrub of mountain cliffs and summits.
The *A. glabra* of Boynton in Small's Flora is **A. caroliniana** Croom., a species of lower altitudes.

Rutaceae. Rue Family.

Xanthoxylum americanum Miller. — **Prickly Ash, Toothache Tree, Pellitory.**
A shrub, locally abundant.

Ptelea trifoliata Linnaeus. — **Wafer Ash.**
An unfrequent shrub of rocky banks, cliffs and mountain summits. (Fork Mt., 5000 ft., *House.*)
The var. **pubescens** Pursh., is the common form in sunny exposed situations.

Simarubaceae. Quassia Family.

Ailanthus glandulosa Desf. — **Tree-of-Heaven.**
A rapidly growing tree of Asiatic origin, freely escaped from cultivation.

Meliaceae. Mohogany Family.

Melia azedarach Linnaeus. — **China Tree, Pride of India.**
A cultivated ornamental tree, frequently established.

Buxaceae. Boxwood Family.

Buxus sempervirens Linnaeus. — **Box.**
A common hedge and ornamental species of the Old World, and tending to become established in many places.

Anacardiaceae. Cashew Family.

Rhus hirta (Linn.) Sudworth. — **Staghorn Sumach.**
Rhus typhina Linnaeus.
Schmaltzia hirta Small.
A large shrub of dry hillsides and thickets.

Rhus glabra Linnaeus. — **Smooth Sumach.**
Schmaltzia glabra Small.
A shrub or small tree abundant in open woods, second growth and along roadsides. An individual at Sunburst measured 10 inches in diameter and about 18 feet in heigth. Rhus oreophila Greene, is possibly distinct.

Rhus copallina Linnaeus. — **Dwarf Sumach.**
Schmaltzia coppalina Small.

Locally abundant at lower altitudes.

Rhus aromatica Aiton. — **Fragrant Sumach.**

? Rhus canadensis Marshall.

Schmaltzia aromatica Desv.

A small shrub of dry rocky woods and sandy places, uncommon.

Rhus vernix Linnaeus. — **Poison Sumach, Poison Dogwood.**

Rhus venenata De Candolle.

A small tree or shrub with compound leaves and clusters of white drupelets, found in swamps and wet places below 3000 feet altitude.

Rhus toxicodendron Linnaeus. — **Poison Oak.**

A low shrub of sandy woods and banks below 2000 feet alt.

Rhus radicans Linnaeus. — **Poison Ivy.**

A common trailing or climbing vine, along streams and rocky places. Only local above 3000 feet altitude.

Aquifoliaceae. Holly Family.

Ilex opaca Aiton. — **American Holly.**

Common at lower elevations, only dwarfed and local at 3000 feet altitude.

Ilex monticola Gray. — **Deciduous Holly.**

Ilex dubia B. S. P.

A small tree or shrub, usually common. Less abundant is the variety **mollis** (Loes.) Britton.

Ilex beadlei Ashe.

A rare shrub closely related to the preceeding.

Ilex verticillata (Linn.) Gray. — **Black Alder, Winter Berry.**

Locally abundant in swamps and moist thickets chiefly below 3000 feet altitude.

Ilex laevigata (Pursh) Gray. — **Smooth Winterberry.**

Ilex longipes Chapman.

Rocky banks, rare.

Celastraceae. Staff Tree Family.

Evonymus americanus Linnaeus. — **Fishwood, Strawberry Bush.**

A slender shrub, common in moist places.

Evonymus atropurpureus Jacquin. — **Wahoo, Burning Bush.**

On river banks below 2000 feet altitude. Rare.

Pachistima canbyi Gray.

A rare shrub on cliffs and shaded banks, northwestern section.

Celastrus scandens Linnaeus. — **Waxwort, Climbing Bittersweet.**

A slender climbing vine of river banks. Rare.

Staphyleaceae. Bladder Nut Family.

Staphylea trifolia Linnaeus. — **American Bladder Nut.**

A shrub of river banks below 2000 feet altitude.

Aceraceae. Maple Family.

Acer pennsylvanicum Linnaeus. — **Striped Maple, Moosewood.**

Common along streams above 3000 feet altitude.

Acer spicatum Lamarck. — **Mountain Maple.**

Common on mountain summits, and along streams and ravines down to 3000 feet altitude.

Acer saccharum Marshall. — **Sugar or Rock Maple.**

A common tree of the mountain forests, but rarely of commercial abundance or quality. Also frequent is the Black Maple, **Acer saccharum** var. **nigrum** (Michx. f.) Britton.

Acer rubrum Linnaeus (1753). — **Red or Swamp Maple.**

A. coccineum Michx. f. (1810).

A. carolinanum Walter (1788).

A. glaucum Marshall (1885).

A. semiorbiculatum Pax (1886).

Common in moist situations, especially in the mountains.

Acer tomentosum Desf. (1829).

A. rubrum subsp. *microphyllum* Wesmael (1890).

A. rubrum var. *tridens* Wood (Gray's Manual).

A. microphyllum Pax (1886).

By some authors referred to *A. carolinianum* Walter, the description of which is too indefinite to be referred to anything but rubrum.

A tree with smooth gray bark; leaves small, subcoriaceous, rounded in outline, 3-lobed, $1^1/_2$ to $2^1/_2$ inches long and as broad, the lobes short and barely acute, margins somewhat crenately toothed, deep green and lustrous above, white and tomentose beneath; petioles short; fruit resembling that of **A. rubrum**, but smaller and with broader wings.

This description applies to a clump of trees on the Pigeon river, about 10 miles above Canton. The species is not rare along streams below 3000 feet altitude.

Acer saccharinum Linnaeus. — **Silver, White or Soft Maple.**

Acer dasycarpum Ehrhart.

A very common ornamental tree in all towns, and although reported in various books as being native to western North Carolina, I have not seen it wild.

Acer negundo Linnaeus. — **Box Elder, Ash-leaved Maple.**

Negundo aceroides Moench.

On alluvial bottom lands and river sides. Rare.

Acer platanoides Linn. and **Acer pseudoplatanus** Linn. are commonly planted from Europe.

Aesculaceae (Hyppocastanaceae). Buckeye Family.

Aesculus octandra Marshall. — **Sweet or Yellow Buckeye.**

Aesculus lutea Wangh.

Aesculus flava Aiton.

Common on mountain sides and along streams at lower elevations.

Aesculus pavia Linnaeus. — **Dwarf Red Buckeye.**

A shrub in woods and thickets below 2000 feet alt.

The European Horsechestnut, **Aesculus hippocastanum** Linn., is commonly planted.

Rhamnaceae (Frangulaceae). Buckthorn Family.

Ceanothus americanus Linnaeus. — **Red-root, New Jersey Tea.**

A small shrub common on dry banks and hillsides.

Rhamnus caroliniana Walter, the **Indian Cherry,** I have not seen within the mountain section.

Vitaceae. Vine Family.

Psedera quinquefolia (Linn.) Greene. — **Woodbine, Virginia Creeper.**

Hedera quinquefolia Linnaeus (1753).

Ampelopsis quinquefolia Michaux (1803).

Parthenocissus quinquefolia Planchon (1887).

A common woody vine of river banks and moist woods.

Vitis cordifolia Lamarck. — **Frost or Chicken Grape.**

Vitis baileyana Munson.

Vitis labrusca Linnaeus. — **Northern Fox Grape, Wild Grape.**

Vitis aestivalis Michaux. — **Summer or Pigeon Grape.**

Vitis bicolor Le Conte. — **Summer Grape.**

Vitis rotundifolia Michaux. — **Muscadine, Bullace or Southern Fox Grape.**

Frequent in cultivation below 2000 feet altitude and said to be native in the lower valleys of the mountains.

Tiliaceae. Linden Family.

Tilia americana Linnaeus. — **Basswood, American Linden.**

A common and important timber tree of the mountain forests.

Tilia heterophylla Vent. — **Silver Linden, White Basswood.**

A large forest tree, distinguished from the preceeding only by close inspection. Locally common.

Tilia michauxii Nuttall.

A small tree along streams chiefly below 2000 feet.

Theaceae. Tea or Camellia Family.

Malachodendron pentagynum (L'Her) Small.

Stuartia pentagyna L'Her.

Along mountain streams, southwestern part of the state.

Hypericaceae. St. John's-wort Family.

Ascyrum stans Michaux. — **St. Peter's-wort.**

Ascyrum hypericoides Linnaeus. — **St. Andrew's Cross.**

Hypericum prolificum Linnaeus. — **Shrubby St. John's-wort.**

Hypericum densiflorum Pursh. — **Shrubby St. John's-wort.**

Hypericum buckleyi M. A. Curtis. — **Shrubby St. John's-wort.**

A low depressed scarcely woody species of high mountain cliffs and summits.

Cistaceae. Rockrose Family.

Hudsonia montana Nuttall. — **Mountain Rockrose.**

Table Rock and adjacent peaks *(Small)*.

Thymelaceae. Mezereum Family.

Dirca palustris Linnaeus. — **Wicopy, Leatherwood.**

A rare shrub of damp cool northern mountain slopes.

Cornaceae. Dogwood Family.

Cornus florida Linnaeus. — **Flowering Dogwood.**

Cynoxylon floridum Rafinesque.

Benthamida florida Spach.

Benthamia florida Nakai.

A small tree, common in dry woods. Exhibiting two forms as to wood and bark.

Cornus amomum Miller. — **Silky Cornel, Kinnikinnik.**

Along streams chiefly below 2000 feet altitude.

Cornus racemosa Lamarck. (1786).

Cornus candidissima Marshall (1785), not Miller.

Cornus paniculata L'Her (1788).

Svida candidissima Small.

Along streams chiefly below 2500 feet altitude.

Cornus alternifolia Linn. f. — **Blue Dogwood, Alternate-leaved Dógwood.**

Svida alternifolia Small.

A small tree, rather abundant.

Nyssa sylvatica Marshall. — **Black Gum, Sour Gum.**

Nyssa multiflora Wangenheim.

A common forest tree up to 3000 feet altitude, rare above that altitude.

Araliaceae. Ginseng Family.

Aralia spinosa Linnaeus. — **Angelica-tree, Hercules Club.**

Common along streams and in thickets of the lowlands, comparatively rare in the mountains, and only in the lowest valleys. Usually a tall spindling shrub, with large leaf-scars, and numerous sharp spines, the leaves large and compound.

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Aralia hispida Vent. — **Bristly Sarsaparilla.**

Rocky or sandy banks and woods, rare. Only slightly woody at the base.

Ericaceae. Heath Family.

Clethra acuminata Michaux. — **Mountain Pepper Bush, White Alder.**

A common shrub along mountain streams.

Chimaphilla umbellata (Linn.) Nuttall. — **Pipsissiwa, Prince's Pine.**

A small, semi-herbaceous shrub of mountain woods.

Chimaphila maculata (Linn.) Pursh. — **Spotted Wintergreen.**

Even lower, and less woody than the preceeding, not rare in the mountain woods.

Dendrium prostratum (Loud.) Small. — **Sand Myrtle.**

Leiophyllum buxifolium var. *prostratum* Schneider.

A rare shrub of mountain summits.

Dendrium hugeri Small. — **Sand Myrtle.**

Leiophyllum buxifolium var. *hugeri* Schneider.

A rare and tiny shrub of rocky summits and cliffs.

Azalea lutea Linnaeus. — **Yellow or Flame Azalea.**

Rhododendrum calendulaceum (Michx.) Torrey.

An abundant shrub and a most conspicuous sight when in full bloom. In nature exhibiting all shades of color from a bright yellow (var. **crocea**) to orange-red (var. **flammea**).

Azalea nudiflora Linnaeus. — **Purple Azalea. Pinxter Flower.**

Rhododendron nudiflorum Torrey.

With the var. **canescens** (Michx.) Rehder, common in dry or sandy woods, especially below 3000 feet altitude.

Azalea viscosa iLnnaeus. — **Clamy Azalea, White Swamp Honeysuckle.**

Rhododendron viscosum Torrey.

Common and variable, in swamps at lower altitudes.

Azalea arborescens Pursh. — **Smooth Azalea.**

Rhododendron arborescens Torrey.

A tall shrub, locally common along mountain streams.

Azalea vaseyi (Gray) Rehder. — **Vasey's Azalea.**

Rhododendron vaseyi Gray.

Biltia vaseyi Small.

Rare and local. Mountain woods from the Pink Beds Valley to the southern border of the state.

Rhododendron maximum Linnaeus. — **Great Laurel.**

Everywhere common, more local at lower altitudes. Rarely with white flowers, var. **album** Pursh.

Rhododendron catawbiense Michaux. — **Mountain Rose Bay.**

Common along mountain ridges and summits, and along streams at lower elevations. Blooms about three weeks earlier than the preceeding.

Rhododendron punctatum Andr. — **Small Bay.**

A small shrub of mountain ridges, slopes and stream banks, nowhere common.

Menziesia pilosa (Michx.) Pers. — **False Heath.**

A rare shrub of the region from Pisgah Ridge to the southern border of the state. (*M. globularia* Salisb.)

Kalmia angustifolia Linnaeus. — **Wicky, Lambkill, Sheep Laurel.** Rare.

Kalmia carolina Small.

Mountains of North Carolina *(Small).*

Kalmia latifolia Linnaeus. — **Spoonwood, Calico Bush, Mountain Laurel.**

The most abundant shrub of the mountains, sometimes almost tree-like. To its pink flowers is due the name "Pink Beds", applied to a well known depression in the mountains of Transylvania County.

Leucothoe catesbaei (Walter) Gray. — **Hemlock, Dog Laurel.**

A low evergreen shrub common everywhere along streams.

Leucothoe recurva (Buckley) Gray.

A slender deciduous shrub nowhere common.

Leucothoe racemosa (Linn.) Gray.

A slender shrub of the sandy parts of the Pink Beds Valley, and doubtless other similar situations in the mountains, found chiefly east of the mountains.

Chamaedaphne calyculata (Linn.) Moench. — **Leatherleaf.**

Cassandra calyculata D. Don.

A low evegreen shrub of the swamps of the Pink Beds Valley and doubtless other swamps, but chiefly at lower altitudes.

Andromeda ligustrina Muhlenberg. — **Male Berry, Wild Privet.**

Xolisma ligustrina Britton.

Lyonia ligustrina De Candolle.

A common shrub of dry slopes up to 3000 or 4000 feet altitude.

Andromeda floribunda Pursh. — **Ivy.**

Pieris floribunda B. & H.

Common on exposed mountain summits, usually above 5000 feet altitude.

Oxydendron arboreum (Linn.) De Candolle. — **Sourwood.**

A small or medium sized tree, common.

Gaultheria procumbens Linnaeus. — **Checkerberry, Teaberry, Wintergreen.**

Common, but scarcely woody.

Epigaea repens Linnaeus. — **Mayflower, Trailing Arbutus.**

Common, but scarcely woody.

Gaylussacia frondosa (Linn.) Torr. & Gray. — **Blue Tangle.**

Common on rocky banks and cliffs.

Gaylussacia ursina (M. A. Curtis) Torr. & Gray. — **Bear Huckleberry.**

A local shrub found chiefly from the Pink Beds Valley southward and westward.

Gaylussacia baccata (Wang.) C. Koch. — **Black Huckleberry.**

Gaylussacia resinosa Torr. & Gray.

Common in dry or sandy woods.

Polycodium neglectum Small. — **Deer Berry. Squaw Huckleberry.**

Common in dry woods.

Polycodium stamineum (Linnaeus) Greene.

Vaccinium stamineum Linnaeus.

Polycodium melanocarpum (Mohr) Small.

Vaccinium staminium var. *melanocarpum* Mohr.

Of the three preseeding species, only the first appears to be common, the last I have not seen.

Vaccinium vacillans Kalm. — **Low Blueberry.**

Common in dry and sandy woods and thickets, especially below 3000 feet altitude. Higher up it is rare.

Vaccinium corymbosum Linnaeus. — **Swamp or High Blueberry.**

Common and variable, especially as regards texture, shape and color of the leaves.

Var. **amoenum** (Aiton) Gray, leaves bristly-ciliate, green on both surfaces, shinning above, slightly pubescent beneath on the veins.

The typical form has leaves with naked, entire margins and usually slightly pubescent or glabrous.

Vaccinium atrococcum (Gray) Heller. — **Downy High Blueberry.**

Vaccinium corymbosum var. *atrococcum* Gray.

Leaves entire, downy or wooly underneath, berries black, without bloom.

Vaccinium pallidum Aiton. — **Mountain Blueberry.**

Vaccinium corymbosum var. *pallidum* Gray.

Vaccinium constablaei Gray.

A species resembling V. corymbosum, but the leaves pale or whitish, glaucous especially beneath, and serrulate.

Vaccinium simulatum Small. — **Mountain Blueberry.**

Closely related to *Vaccinium pallidum*.

A low dense shrub of high mountain summits and ridges.

Vaccinium hirsutum Buckley. — **Mountain Blueberry.**

On shaded mountain slopes and summits.

Oxycoccus erythrocarpus (Michx.) Persoon. — **Mountain Cranberry.**

Vaccinium erythrocarpum Michaux.

Oxycoccus erectus Pursh.

Hugeria erythrocarpum Small.

A rare shrub of open mountain summits above 5000 feet.

Oxycoccus macrocarpus (Aiton) Pursh. — **Cranberry.**

Vaccinium macrocarpum Aiton.

Vaccinium oxycoccus var. *oblongifolius* Michaux.

A slender trailing evergreen plant of the mossy coniferous forests of the high mountains. Gray's New Manual also records **Oxycoccus oxycoccus intermedium** (A. Gray) Piper, from N. C.

Ebenaceae. Ebony Family.

Diospyros virginiana Linnaeus. — **Persimmon.**

Common in dry situations at low elevations.

Styracaceae. Storax Family.

Symplocos tinctoria (Linn.) L'Her. — **Horse Sugar, Sweet-leaf.**

A shrub or small tree of sandy soils and river banks. Common in the Pink Bed Valley, and on Lookingglas Mountain.

Halesia carolina Linnaeus. — **Silver-bell Tree, Tis-wood, Opossum-wood, Box Elder.**

Mohrodendron carolinum Britton.

A small to medium sized tree, usually common.

Oleaceae. Olive Family.

Fraxinus americana Linnaeus. — **White Ash.**

Fraxinus juglandifolia Lamarck.

Fraxinus catawbiensis Ashe.

A common forest tree of high commercial value, exceedingly variable in respect to the texture of the foliage and the size of the fruit, most noticable is the var. **albicans** (Buckley) Lingelsheim, (1911). *Fraxinus albicans* Buckley (1862) and *Fraxinus curtissii* Vasey.

Fraxinus biltmoreana Beadle. — **Biltmore Ash.**

Local. Lingelsheim suggests that this is a hybrid between F. americana and F. pennsylvanica.

Fraxinus pennsylvanica Marshall. — **Red Ash.**

Fraxinus pubescens Lamarck.

Common along streams and bottom lands below 2500 feet altitude. The extremely narrow fruited form is described as **Fraxinus darlingtonii** Britton, while a form with broad, entire leaflets, is described as **Fraxinus michauxii** Britton.

Chionanthus virginica Linnaeus (1753). — **Fringe Tree.**

Chionanthus trifida Moench (1794).

Chionanthus maritima Pursh (1814).

Chionanthus pubescens H. B. K.

The mountain form of this species possesses broader, thicker and smoother leaves than the lowland form and might be designated as

Chionanthus virginica forma **montana** (Pursh) House.

C. montana Pursh.

C. virginica var. *latifolia* Dippel.

Syringa vulgaris Linnaeus. — **Common Lilac.**
A common escape from cultivation.

Ligustrum vulgare Linnaeus. — **Privet.**
Quite freely escaped or established in old yards and roadsides, especially so the var. **sempervirens** Loud.

Ligustrum japonicum Thunberg. — **Japanese Privet.**
Established along the Swananoa River at Biltmore.

Scrophulariaceae. Figwort Family.

Paulownia tomentosa (Thunb.) Baill. — **Paulownia.**
An ornamental tree of Asiatic origin, frequently escaped.

Bignoniaceae. Bignonia Family.

Catalpa catalpa (Linn.) Karsten. — **Catalpa, Indian Bean.**
Bignonia catalpa Linnaeus (1753).
Catalpa bignonioides Walter (1788).
Catalpa syringaefolia Sims (1805).
A frequent tree along river banks, introduced from the gulf states.

Tecoma radicans (Linn.) Juss. — **Trumpet-vine.**
An ornamental vine, of the coastal and gulf regions, commonly planted and occasionally escaped.

Rubiaceae. Madder Family.

Cephalanthus occidentalis Linnaeus. — **Buttonbush.**
Along streams and in wet places at low altitudes.

Caprifoliaceae. Honeysuckle Family.

Diervilla diervilla (Linn.) MacMillan. — **Bush Honeysuckle.**
Diervilla lonicera Miller.
Diervilla trifida Moench.
Mountain summits and ridges.

Diervilla sessilifolia Buckley.
Along streams and on mountain summits.

Diervilla rivularis Gattinger.
Mountain summits, meadows and stream banks.

Lonicera canadensis Marshall. — **Fly Honeysuckle.**
Lonicera ciliata Muhlenberg.
Xylosteon ciliatum Pursh.
Moist cold slopes and rocky woods at high altitudes. Rare and local. (Sunburst, 4500 feet alt. *House*.)

Lonicera dioica Linnaeus.
Lonicera glauca Hill.
Lonicera parviflora Lamarck.
A slender woody vine, usually local and rare.

Lonicera flava Sims. — **Yellow Honeysuckle.**

Caprifolium fraseri Pursh.

A small, slender woody vine, of rocky slopes, rare.

Lonicera sempervirens Linnaeus. — **Woodbine, Trumpet Honeysuckle.**

Common in cultivation and native along streams below 2000 feet altitude.

Lonicera glaucescens Rydberg.

North Carolina (Small's Flora).

Lonicera caprifolium Linnaeus. — **Italian Woodbine.**

Lonicera grata Aiton.

Common in cultivation, and occasionally established.

Lonicera japonica Thunberg. — **Japanese Honeysuckle.**

Nintooa japonica Sweet.

An exceedingly common escape, everywhere about habitations.

Symphoricarpos racemosus Michaux. — **Snowberry.**

Rocky banks and cliffs of the mountains. Not common.

Symphoricarpos symphoricarpos (Linn.) MacMillan. — **Coralberry.**

Symphoricarpos vulgaris Michaux.

A common escape along the French Broad River, on the Biltmore Estate, and doubtless in other localities.

Viburnum alnifolium Marshall. — **Hobblebush, Witch Hobble.**

Viburnum lantanoides Michaux.

Open woods and thickets of the higher mountains, rarely seen below 5000 feet altitude except on cold northern slopes.

Viburnum acerifolium Linnaeus. — **Dockmackie, Arrow-wood.**

Common in dry woods.

Viburnum dentatum Linnaeus. — **Arrow-wood.**

Peak Mt., southwest Virginia *(Small)*; Swamps near Hendersonville *(House)*, and doubtless in other localities, but more abundant in the lowlands.

Viburnum pubescens (Ait.) Pursh. — **Downy Arrow-wood.**

Rare, on rocky banks and cliffs.

Viburnum prunifolium Linnaeus. — **Black Haw.**

A small tree or large shrub, common along streams, especially below 3000 feet altitude.

Viburnum cassinoides Linnaeus. — **Wild Rasin, Withe-rod.**

Common in moist thickets and along streams, chiefly below 3000 feet altitude.

Viburnum lentago Linnaeus. — **Sheepberry, Nannyberry.**

A shrub or small tree of stream banks and mountain summits. Rare.

Viburnum rufidulum Rafinesque.

Viburnum rufotomentosum Small.

A large shrub, of cold damp ravines and summits.

Sambucus canadensis Linnaeus. — **Common Elder, Elderberry.**

A common shrub along streams and wet places, chiefly at altitudes below 3500 feet.

Sambucus racemosa pubens (Michaux) House. — **Red-berried Elder.**
Sambucus pubens Michaux.

This species is widely distributed around the northern hemisphere, and presents many geographical subspecies, that of the eastern states being particularly closely related to the European form, so much so, that it is retained under the name of **S. racemosa** by many authors.

SUMMARY.

Of the 315 species recorded:

118 are native trees, although many are only occasionally tree-like, as **Kalmia, Rhododendron, Symplocos,** etc.
147 are native shrubs.
24 are native vines.
17 are introduced trees.
6 are introduced shrubs.
3 are introduced vines.

A total of 289 native species and 26 introduced species.

The largest families are:

The **Rosaceae** (incl. 24 species of **Crataegus**), with 51 native species, or 17.6 % of the native woody flora.
The **Ericaceae,** with 40 native species, or 14 % of the native woody flora.
The **Caprifoliaceae,** with 19 native species, or 6.6 % of the native woody flora.
The **Fagaceae,** with 18 native species, or 6.2 % of the native woody flora.
The **Pinaceae,** with 13 native species, or 4.5 % of the native woody flora.

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